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Conference Abstract

The LifeWatch Taxonomic Backbone: Connecting information on taxonomy, biogeography, literature, traits and genomics

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Abstract

The Flanders Marine Institute (VLIZ) is responsible for the set-up of the LifeWatch Taxonomic Backbone (LW-TaxBB), as a central part of the European LifeWatch Infrastructure. The LW-TaxBB aims to (virtually) bring together different component databases and data systems, all of them related to taxonomy, biogeography, ecology, genetics and literature. By doing so, the LW-TaxBB standardises species data and integrates biodiversity data from different repositories and operating facilities and is the driving force behind the species information services of the Belgian LifeWatch.be e-Lab and the Marine Virtual Research Environment that are being developed.

The mission of LifeWatch is to advance biodiversity research and to provide major contributions to address the big environmental challenges, such as knowledge-based solutions for environmental managers in the field of conservation or dealing with long-standing ecological questions that could so far not be addressed due to a lack of data or a lack of good and easy access to data. This is being achieved by giving access to data and information through a single infrastructure which (virtually) brings together a large range and variety of datasets, services and tools. Scientists can use these tools and services to construct so-called Virtual Research Environments (VREs), where they are able to address

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specific questions related to biodiversity research, including e.g. topics related to conservation. They are not only offered an environment with unlimited computer and data storage capacity, but there is also transparency at all stages of the research process and the generic application of the e-infrastructure opens the door towards more inter- and multidisciplinary research.

The LW-TaxBB – virtually - brings together different component databases and data systems, dealing with five major components: (1) taxonomy, through regional, national, European, global and thematic databases, (2) biogeography, based on databases dealing with species occurrences, (3) ecology, in the form of species-specific traits, (4) genetics and (5) literature, by linking all available information to the relevant sources and through tools that can intelligently search this literature.

The LifeWatch Taxonomic Backbone is a two-way street: besides using the tools and functionalities it is offering – which are often developed based on identified needs within the scientific community -, scientists can also contribute themselves to make it more complete. Feedback on all available data and information (e.g. taxonomy and traits) is highly appreciated and communicated with the experts involved in the different component databases. All distribution information collected by individual scientists can become part of the biogeographic component of this backbone, by contributing occurrence data to the system.

Through the LW-TaxBB, users benefit in several ways, amongst others by:

- Easy access to data and information to a variety of resources
- The opportunity to quality control their own data, by cross-checking with data available through the LW-TaXBB
- Free and easy access to a wide range of data services and web services
- Possibility to combine available services into workflows, and link several systems together

Major components of the LW-TaxBB are – amongst others - the World Register of Marine Species (WoRMS) and the European node of the Ocean Biogeographic Information System (EurOBIS). WoRMS is an authoritative classification and catalogue of marine names currently containing 233,275 accepted marine species. EurOBIS publishes distribution data on marine species, collected within European marine waters or collected by European researchers outside European marine waters and currently contains 24.8 million distribution records. Both these systems have a strong link and collaboration agreements with international initiatives such as e.g. the Catalogue of Life (CoL), the Ocean Biogeographic Information System (OBIS) and the Global Biodiversity Information System (GBIF) and aim to collaborate with other ESFRIs such as DiSSCO and ELIXIR.

Keywords

taxonomy, biogeography, literature, traits, genetics

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